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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,062	06/25/2001	Virginia M. Litwin	48965-B/JPW/SHS/AAB	9893

7590 09/24/2003

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EXAMINER
PARKIN, JEFFREY S

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/891,062	LITWIN ET AL.	
	Examiner	Art Unit	
	Jeffrey S. Parkin, Ph.D.	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Amendment

Status of the Claims

1. Acknowledgement is hereby made of receipt and entry of the amendment submitted 20 June, 2003. No amendments to the claims accompanied the response. Claims 40-47 are pending in the instant application.

35 U.S.C. § 112, First Paragraph

2. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 40-47 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *In re Rasmussen*, 650 F.2d 1212, 211 U.S.P.Q. 323 (C.C.P.A. 1981). *In re Wertheim*, 541 F.2d 257, 191 U.S.P.Q. 90 (C.C.P.A. 1976). The claims include the limitations "**specifically inhibit 67% or greater**" and "**inhibit 18% or less of fusion**" which fail to receive adequate support in the disclosure. The disclosure describes the preparation, isolation, and preliminary characterization of four monoclonal antibodies produced by the hybridomas designated PA-3, -5, -6, and -7. Applicants initially attempted to identify HIV-1 fusion inhibitory antibodies that did not bind specifically to CD4. Immunization strategies employing HeLa and C8166 cell lines, as well as, proteinase-digested human erythrocytes were initially

employed. However, these strategies all failed to produce antibodies with the desired characteristics. Finally, PM-1 cells were employed as an immunogen and four hybridoma cell lines were identified that produced antibodies with the desired characteristics (i.e., HIV-1 fusion inhibitory without binding to CD4 or the viral Env). Preliminary characterization of these antibodies suggests that PA-3 and PA-5 recognize CD11a or CD18, whereas, PA-6 and PA-7 recognize HLA Class II. **The fusion inhibitory activities of these antibodies were further characterized in HeLa-env RET assay wherein it was reported that PA-3, -5, -6, and -7 inhibited fusion between PM-1 cells and HeLa-env_{JR-FL} 85%, 96%, 92% and 67%, respectively. Fusion inhibitory studies involving HeLa-env_{LAI} cell lines provided inhibitory values of 90%, 100%, 81% and 69% for said antibodies. Sup-T1 fusion inhibitory studies produced inhibitory rates of 2.5%, 0%, 18%, and 11%. Thus, the skilled artisan would reasonably conclude that applicants were in possession of the monoclonal antibodies PA-3, -5, -6, and -7.** Appropriate inhibitory methodology claim language employing these four Mabs would be acceptable.

Applicants are reminded that the essence of the statutory requirement governing written description is whether one skilled in the art, familiar with the practice of the art at the time of the filing date, could reasonably have found the later claimed invention in the specification as filed. *In re Kaslow*, 707 F.2d 1366, 1375, 217 U.S.P.Q. 1089, 1096 (Fed. Cir. 1983). *In re Wilder*, 736 F.2d 1516, 1520 222 U.S.P.Q. 349, 372 (Fed. Cir. 1984, *cert. denied*, 469 U.S. 1209 (1985). *Texas Instruments, Inc.* v. *International Trade Comm'n*, 871 F.2d 1054, 1063, 10 U.S.P.Q.2d 1257, 1263 (Fed. Cir. 1989). Moreover, the courts have stated that the evaluation of written description is highly fact-specific, and that broadly articulated rules are inappropriate. *In re Wertheim*, 541 F.2d 257, 263, 191 U.S.P.Q. 90, 97 (C.C.P.A. 1976). *In re*

Driscoll, 562 F.2d 1245, 1250, 195 U.S.P.Q. 434, 438 (C.C.P.A. 1977). It is also important to remember that the true issue in question is not whether the specification enables one of ordinary skill in the art to make the later claimed invention, but whether or not the disclosure is sufficiently clear that those skilled in the art will conclude that the applicant made the invention having the specific claim limitations. *Martin* v. *Mayer*, 823 F.2d 500, 505, 3 U.S.P.Q.2d 1333, 1337 (Fed. Cir. 1987).

Upon perusal of the disclosure, the skilled artisan would not conclude that applicants were in possession of monoclonal antibodies with the currently claimed binding characteristics. The claims are currently directed toward a large genus of antibodies that were neither contemplated nor described by the applicants. While a small number of antibodies have been identified and partially characterized, at no time did applicants contemplate making and using antibodies with the specifically recited binding characteristics. There is no description of attempting to isolate and purify antibodies with specific inhibitory ranges of 67% or greater in PM-1 cell lines or 18% or less in Sup-T1 cell lines. Thus, the claimed ranges are not supported by the disclosure. The courts have also concluded that the disclosure of a single or limited number of species is insufficient support for claims directed toward a broader genus. *In re Gosteli*, 872 F.2d 1008, 1010, 10 U.S.P.Q.2d 1614, 1616 (Fed. Cir. 1989). *In re Blaser*, 556 F.2d 534, 538-39, 194 U.S.P.Q. 122, 125-26 (C.C.P.A. 1977). *In re Wertheim*, 541 F.2d 257, 263, 191 U.S.P.Q. 90, 97 (C.C.P.A. 1976). *In re Lukach*, 442 F.2d 967, 969, 169 U.S.P.Q. 795, 797 (C.C.P.A. 1971). Thus, the skilled artisan would reasonably conclude that applicants were not in possession of the claimed invention at the time of filing.

Applicants traversed the rejection and argued that sufficient support exists for the claimed invention. In addition, a

declaration was also provided by Dr. Ronald C. Kennedy as further support. Neither the arguments or declaration are sufficient to overcome the rejection. Nothing contained in the response directs the skilled artisan to a specific passage or portion of the disclosure that clearly and unambiguously describes the claimed invention. Accordingly the rejection is properly maintained.

4. Claims 40-47 stand further rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *In re Rasmussen*, 650 F.2d 1212, 211 U.S.P.Q. 323 (C.C.P.A. 1981). *In re Wertheim*, 541 F.2d 257, 191 U.S.P.Q. 90 (C.C.P.A. 1976). To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., *Vas-Cath, Inc., v. Mahurkar*, 935 F.2d at 1563, 19 U.S.P.Q.2d at 1116.

The issue raised in this application is whether the original application provides adequate support for fusion inhibitory methods employing the broadly claimed genus of monoclonal antibodies. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 U.S.P.Q.2d 1961, 1966 (Fed. Cir. 1997). **The claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A**

biomolecule sequence described only by functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the biomolecule of interest. *In re Bell*, 991 F.2d 781, 26 U.S.P.Q.2d 1529 (Fed. Cir. 1993). *In re Deuel*, 51 F.3d 1552, 34 U.S.P.Q.2d 1210 (Fed. Cir. 1995). A lack of adequate written description issue also arises if the knowledge and level of skill in the art would not permit one skilled in the art to immediately envisage the product claimed from the disclosed process. See, e.g., *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 U.S.P.Q.2d 1895, 1905 (Fed. Cir. 1995). The court noted in this decision that a "laundry list" disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not reasonably lead those skilled in the art to any particular species.

An applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole. An applicant may also show that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics which provide evidence that applicant was in possession of the claimed invention, i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics. For some biomolecules, examples of identifying characteristics include a nucleotide or amino acid sequence, chemical structure, binding affinity, binding specificity, and molecular weight. The written description requirement may be satisfied through disclosure of function and minimal structure when there is a well-established correlation

between structure and function. Without such a correlation, the capability to recognize or understand the structure form the mere recitation of function and minimal structure is highly unlikely. In the latter case, **disclosure of function alone is little more than a wish for possession; it does not satisfy the written description requirement.** *Regents of the University of California v. Eli Lilly*, 119 F.3d 1559, 1566, 43 U.S.P.Q.2d 1398, 1404, 1406 (Fed. Cir. 1997), *cert. denied*, 523 U.S. 1089 (1998). *In re Wilder*, 736 F.2d 1516, 1521, 222 U.S.P.Q. 369, 372-3 (Fed. Cir. 1984). Factors to be considered in determining whether there is sufficient evidence of possession include the level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention.

In the instant application, the disclosure provides generic methods for obtaining antibodies that are capable of inhibiting HIV-1 envelope-mediated cell fusion. However, these screening procedures are not designed to identify Mabs with the currently claimed binding characteristics. They are simply designed to identify fusion inhibitors. Moreover, the disclosure fails to provide any detailed guidance pertaining to the structural characteristics of the monoclonal antibodies employed in the fusion assay. Applicants have failed to provide any guidance pertaining to the amino acid sequence of any of the given antibodies. Applicants have failed to provide any detailed structural guidance pertaining to the antigenic determinants that are recognized by said antibodies. Thus, the disclosure fails to provide even a modicum of structural information pertaining to the antibodies of interest. Moreover, the disclosure does not provide a reproducible method for making antibodies with the claimed binding characteristics. Four antibodies were identified using the claimed

method and they all had different binding characteristics. These findings are not unexpected given the unpredictability of the art. Accordingly, the skilled artisan would reasonably conclude that applicants have failed to provide an adequate written description for the claimed genus of antibodies employed in the claimed methodology.

Applicants argued that a sufficient written description of the claimed genus of compounds was present. A declaration was provided by Dr. Ronald C. Kennedy further asserting that a sufficient written description for the claimed invention was present. These arguments are insufficient. The disclosure provides a generic method for obtaining monoclonal antibodies with fusion inhibitory properties. However, the disclosure fails to set forth any of the molecular determinants responsible for the antiviral activities of the required Mabs. The disclosure fails to set forth the antigenic determinants recognized by the Mabs of interest. Thus, the applicants have no knowledge of the amino acid sequences that are critical for the recited antiviral activities. Thus, this situation is quite apropos to the case law cited above wherein the courts have clearly concluded that a generic method of production without any further structural guidance is insufficient support for a broad genus of products. Accordingly the rejection is proper and hereby maintained.

Finality of Office Action

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a). **A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE**

SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Correspondence

6. Correspondence related to this application may be submitted to Group 1600 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Official communications should be directed toward the following Group 1600 fax number: (703) 872-9306. Any inquiry concerning this communication should be directed to Jeffrey S. Parkin, Ph.D., whose telephone number is (703) 308-2227. The examiner can normally be reached Monday through Thursday from 8:30 AM to 6:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner are unsuccessful, the examiner's supervisors, Laurie Scheiner or James Housel, can be reached at (703) 308-1122 or (703) 308-4027, respectively. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is (703) 308-0196.

Respectfully,

Jeffrey S. Parkin, Ph.D.
Patent Examiner
Art Unit 1648

20 September, 2003

LAURIE SCHEINER
PRIMARY EXAMINER